Amendments to the Claims:

Claims 1, 2, 4-13, 15, 16, 18-26, 28-31 and 33-48 were pending at the time of the Office Action.

Claims 1, 8, 15, 22, 29, 43, and 46 are amended.

Claims 1, 2, 4-13, 15, 16, 18-26, 28-31 and 33-48 remain pending.

1. (Currently Amended) An apparatus for supporting a manufacturing tool relative to a workpiece, the apparatus comprising:

a track assembly <u>having a plurality of vacuum attachment devices configured</u> ~~adapted~~ to be attached to the workpiece and including at least one rail, the rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and a rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis, wherein the rack comprises a plurality of tapered apertures disposed within the substantially smooth surface, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack; and

a carriage comprising an x-axis portion moveably coupled to the track assembly and moveable relative to the workpiece along the rail, the carriage including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack, the carriage further comprising a y-axis portion slideably coupled to the x-axis portion and moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the rail of

the track assembly._

2. (Original) The apparatus of Claim 1, wherein the rack is integrally-formed in the rail.

3. (Canceled).

4. (Previously Presented) The apparatus of Claim 1, wherein the tapered apertures include a plurality of wedge shaped apertures.

5. (Previously Presented) The apparatus of Claim 1, wherein the tapered apertures include a plurality of conically-shaped apertures.

6. (Original) The apparatus of Claim 1, wherein the rail comprises a substantially flat member having a width substantially greater than a thickness of the substantially flat member, the substantially flat member being substantially stiffer in bending about a stiff axis that extends in a first direction aligned along the thickness of the substantially fiat member, and being substantially more flexible in bending about a bending axis that extends in a second direction aligned along the width of the substantially flat member.

7. (Original) The apparatus of Claim 1, wherein the at least one rail comprises a first rail and a second rail oriented approximate parallel to the first rail, the first and second rails each having a longitudinally-extending neutral axis and a rack, the rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis.

8. (Currently Amended) The apparatus of Claim 1, wherein the track assembly includes:

first and second elongate flexible rails, the rails being spaced apart and approximately parallel to each other; and <u>wherein the</u> [[a]] plurality of vacuum

attachment devices are connected to each rail and spaced at intervals therealong for releasably attaching each rail to the surface of the workpiece by vacuum, with the widths of the rails extending substantially parallel to the surface of the workpiece, the rails bending and twisting as needed to substantially follow the surface of the workpiece.

9. (Original) The apparatus of Claim 8, wherein each rail is relatively stiff in bending about a first bending axis and relatively flexible in bending about a second bending axis orthogonal to the first bending axis, and wherein each rail is mounted on the workpiece such that the first bending axis is substantially normal to the workpiece surface and the second bending axis is substantially parallel to the workpiece surface.

10. (Previously Presented) The apparatus of Claim 1, wherein the carriage includes a tool support configured to receive and support a manufacturing tool.

11. (Previously Presented) The apparatus of Claim 1, wherein the carriage includes a drive assembly configured to drive the carriage along the track assembly and having a drive motor coupled to the drive gear.

12. (Previously Presented) The apparatus of Claim 1 wherein the carriage includes a drive assembly configured to drive the carriage along the track assembly and having a drive motor coupled to the drive gear, the apertures being configured to match a cross-sectional profile of the teeth.

13. (Original) The apparatus of Claim 10, further comprising an opposing-force support assembly operatively coupled to the carriage and adapted to be secured to the workpiece to at least partially counterbalance a manufacturing force exerted on the workpiece by the manufacturing tool.

14. (Canceled).

15. (Currently Amended) An assembly for performing a manufacturing operation on a workpiece, the assembly comprising:

a track assembly having a plurality of vacuum attachment devices configured to be attached to the workpiece and including a plurality of rails, the rails being spaced apart and oriented approximately parallel, each rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis, and at least one rail having a rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis, wherein the rack comprises a plurality of tapered apertures disposed within the substantially smooth surface of the at least one rail, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack;

a carriage comprising an x-axis portion moveably coupled to the track assembly and moveable relative to the workpiece along the rails, the carriage including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack, the carriage further comprising a y-axis portion slideably coupled to the x-axis portion and moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the at least one rail of the track assembly, the carriage including a tool support adapted to receive and support a manufacturing tool; and

a manufacturing tool coupled to the tool support and configured to be engageable with the workpiece to perform the manufacturing operation on the workpiece.

16. (Previously Presented) The assembly of Claim 15, wherein the at least one rack is

integrally-formed in the at least one rail.

17. (Canceled).

18. (Previously Presented) The assembly of Claim 15, wherein the tapered apertures includes a plurality of wedge-shaped apertures.

19. (Previously Presented) The assembly of Claim 15, wherein the tapered apertures includes a plurality of conically-shaped apertures.

20. (Previously Presented) The assembly of Claim 15, wherein each of the rails comprises a substantially flat member having a width substantially greater than a thickness of the substantially flat member, the substantially flat member being substantially stiffer in bending about a stiff axis that extends in a first direction aligned along the thickness of the substantially flat member, and being substantially more flexible in bending about a bending axis that extends in a second direction aligned along the width of the substantially flat member.

21. (Previously Presented) The assembly of Claim 15, wherein the plurality of rails comprises a first rail and a second rail.

22. (Currently Amended) The assembly of Claim 15, wherein the ~~track assembly further comprises: a~~ plurality of vacuum attachment devices are connected to each rail and spaced at intervals therealong for releasably attaching each rail to the surface of the workpiece by vacuum, with the widths of the rails extending substantially parallel to the surface of the workpiece, the rails bending and twisting as needed to substantially follow the surface of the workpiece.

23. (Original) The assembly of Claim 22, wherein each rail is relatively stiff in bending about a first bending axis and relatively flexible in bending about a second

bending axis orthogonal to the first bending axis, and wherein each rail is mounted on the workpiece such that the first bending axis is substantially normal to the workpiece surface and the second bending axis is substantially parallel to the workpiece surface.

24. (Original) The assembly of Claim 15, wherein the carriage includes a drive assembly adapted to drive the carriage along the track assembly and having a drive motor coupled to a drive gear, the drive gear operatively engaging the rack.

25. (Original) The assembly of Claim 15, wherein the rack includes a plurality of apertures and wherein the carriage includes a drive assembly adapted to drive the carriage along the track assembly and having a drive motor coupled to a drive gear, the drive gear having a plurality of teeth, at least some of the teeth operatively engaging the apertures of the rack, the apertures being adapted to match a cross-sectional profile of the teeth.

26. (Original) The assembly of Claim 15, further comprising an opposing-force support assembly operatively coupled to the carriage and adapted to be secured to the workpiece to at least partially counterbalance a manufacturing force exerted on the work-piece by the manufacturing tool.

27. (Canceled).

28. (Original) The assembly of Claim 15, wherein the manufacturing tool includes a drill and the manufacturing operation includes a drilling operation.

29. (Currently Amended) A method of performing a manufacturing operation on a workpiece, the method comprising:

attaching a track assembly to the workpiece with a plurality of vacuum attachment devices, the track assembly including at least one rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and a rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis, wherein the rack comprises a plurality of tapered apertures disposed within the substantially smooth surface, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack;

moveably coupling a carriage to the track assembly, the carriage comprising an x-axis portion moveable relative to the workpiece along the rails, the x-axis portion including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack;

slideably coupling a y-axis portion to the x-axis portion of the carriage, wherein the y-axis portion is moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the rail of the track assembly;

moveably supporting a manufacturing tool on the carriage;

engaging a drive apparatus with the drive gear; and

driving the carriage supporting the manufacturing tool along the track assembly using the drive apparatus.

30. (Original) The method of Claim 29, wherein attaching a track assembly to the workpiece includes applying a suction force against the workpiece with the track

assembly.

31. (Original) The method of Claim 29, wherein attaching a track assembly to the workpiece includes attaching a track assembly having at least one rail that includes a rack integrally-formed in the rail.

32. (Canceled).

33. (Previously Presented) The method of Claim 29, wherein attaching a track assembly to the workpiece includes attaching a track assembly having at least one rail that includes a rack, wherein the rack comprises a plurality of wedge-shaped apertures.

34. (Previously Presented) The method of Claim 29, wherein attaching a track assembly to the workpiece includes attaching a track assembly having at least one rail that includes a rack, wherein the rack comprises a plurality of conically-shaped apertures.

35. (Original) The method of Claim 29, wherein attaching a track assembly to the workpiece includes attaching a track assembly having at least one rail, wherein the rail comprises a substantially flat member having a width substantially greater than a thickness of the substantially flat member, the substantially flat member being substantially stiffer in bending about a stiff axis that extends in a first direction aligned along the thickness of the substantially flat member, and being substantially more flexible in bending about a bending axis that extends in a second direction aligned along the width of the substantially flat member.

36. (Previously Presented) The method of Claim 29, wherein moveably supporting a manufacturing tool on the carriage includes providing a tool support adapted to receive and support a manufacturing tool on the carriage.

37. (Previously Presented) The method of Claim 29, wherein engaging a drive apparatus with the rack includes providing the carriage with a drive assembly adapted to drive the carriage along the track assembly and having a drive motor coupled to a drive gear, the drive gear operatively engaging the rack.

38. (Original) The method of Claim 29, wherein engaging a drive apparatus with the rack includes engaging at least one tooth with at least one aperture, the aperture being adapted to match a cross-sectional profile of the tooth.

39. (Original) The method of Claim 29, further comprising performing a manufacturing operation on the workpiece using the manufacturing tool.

40. (Original) The method of Claim 39, wherein performing a manufacturing operation includes performing a drilling operation.

41. (Original) The method of Claim 29, further comprising applying an opposing force against the workpiece using an opposing-force support assembly, the opposing force being in a direction substantially opposing a manufacturing force exerted against the workpiece during a manufacturing operation.

42. (Original) The method of Claim 41, further comprising simultaneously with applying an opposing force, performing a manufacturing operation on the workpiece using the manufacturing tool.

43. (Currently Amended) An assembly for performing a manufacturing operation on a workpiece, the assembly comprising:

a track assembly having plurality of vacuum attachment devices attachable to the workpiece and including a plurality of rails, the rails being spaced apart and oriented approximately parallel, each rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and a rack extending along a pitch line that at least approximately coincides with the longitudinally-extending neutral axis, wherein the rack includes a plurality of apertures disposed within the substantially smooth surface, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack; and

a carriage comprising an x-axis portion moveably coupled to the track assembly and moveable relative to the workpiece along the rails, the carriage including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack, the carriage further comprising a y-axis portion slideably coupled to the x-axis portion and moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the rail of the longitudinally-extending neutral axis, the y-axis being approximately co-planar with the substantially smooth surface of the rail of the track assembly;

the carriage including a manufacturing tool that performs the manufacturing operation on the workpiece, and a drive assembly having at least one rotatable drive gear that includes a plurality of outwardly-projecting teeth configured to fittingly engage the plurality of apertures as the drive gear is rotated, the drive gear moving

the carriage along the track assembly as the drive gear is rotated.

44. (Previously Presented) The assembly of Claim 43, wherein the plurality of apertures includes a plurality of tapered apertures.

45. (Previously Presented) The assembly of Claim 43, wherein the plurality of apertures includes a plurality of apertures configured to match a cross-sectional profile of the teeth.

46. (Currently Amended) A method of performing a manufacturing operation on a workpiece, the method comprising:

attaching a track assembly to the workpiece using a plurality of vacuum attachment devices, the track assembly including a plurality of rails, the rails being spaced apart and oriented approximately parallel, each rail including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and at least one rail having a rack extending along a pitch line that at least approximately coincides with its longitudinally-extending neutral axis, wherein the rack includes a plurality apertures disposed within the substantially smooth surface, the plurality of tapered apertures being uniformly spaced along the longitudinally-extending neutral axis of the rack;

moveably coupling a carriage to the track assembly, the carriage comprising an x-axis portion moveable relative to the workpiece along the rails, the x-axis portion including a drive gear having a plurality of drive teeth, the plurality of tapered apertures being configured and spaced to fittingly receive one or more of the plurality of drive teeth as the drive gear rollably engages the rack;

slideably coupling a y-axis portion to the x-axis portion of the carriage, wherein the y-axis portion is moveable with respect to the x-axis portion along a y-axis oriented transversely to the longitudinally-extending neutral axis, the y-axis

being approximately co-planar with the substantially smooth surface of the rail of the track assembly;

moveably supporting a manufacturing tool on the carriage;

engaging a drive assembly with the rack, the drive assembly having at least one rotatable drive gear that includes a plurality of outwardly-projecting teeth configured to fittingly engage the plurality of apertures as the drive gear is rotated; and

driving the carriage along the track assembly including rotating the drive gear.

47. (Previously Presented) The method of Claim 46, wherein attaching a track assembly to the workpiece includes attaching a track assembly to the workpiece, the track assembly including a plurality of rails, the rails being spaced apart and oriented approximately parallel, each rail having a longitudinally-extending neutral axis and at least one rail has a rack extending along a pitch line that at least approximately coincides with its longitudinally-extending neutral axis, wherein the rack includes a plurality of tapered apertures.

48. (Previously Presented) The method of Claim 46, wherein attaching a track assembly to the workpiece includes attaching a track assembly to the workpiece, the track assembly including a plurality of rails, the rails being spaced apart and oriented approximately parallel, each rail having a longitudinally-extending neutral axis and at least one rail has a rack extending along a pitch line that at least approximately coincides with its longitudinally-extending neutral axis, wherein the rack includes a plurality of apertures configured to match a cross-sectional profile of the teeth.